Murshidabad University

B.Sc. Sericulture (NEP)

Semester – II

SER-M-201 (Theory)

Biology of Mulberry and Soil Science

Comprehensive Examination Notes

Based on the Murshidabad University Syllabus

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UNIT 1: BIOLOGY OF MULBERRY

1. Taxonomy & Morphology of Mulberry

Introduction

Mulberry is the primary food plant of the silkworm, *Bombyx mori*. Healthy mulberry leaves are essential for producing high-quality silk. Mulberry belongs to the genus *Morus* and family Moraceae.

Taxonomy of Mulberry

Rank	Classification
Kingdom	Plantae
Division	Magnoliophyta (Angiosperms)
Class	Magnoliopsida (Dicotyledons)
Order	Rosales
Family	Moraceae
Genus	*Morus*
Species	*Morus alba*, *Morus indica*, *Morus serrata*, *Morus laevigata*, *Morus nigra*, etc.

Important Mulberry Species

1. *Morus alba* (White Mulberry)

- Native to China.
- Most widely cultivated species.
- Soft, nutritious leaves.
- Best food plant for silkworms.

2. *Morus indica* (Indian Mulberry)

- Common in India.
- Suitable for tropical climate.
- High leaf yield.

3. *Morus serrata*

- Found in Himalayan regions.
- Cold tolerant.
- Large leaves.

4. *Morus laevigata*

- Grows in hilly areas.
- Large fruits and broad leaves.

5. *Morus nigra* (Black Mulberry)

- Mainly grown for fruits.
- Leaves are coarse and less preferred for silkworm feeding.

Popular Mulberry Varieties of South India

- V1
- S36
- S54
- MR2
- G4

These varieties are high-yielding and suitable for irrigated conditions.

Popular Mulberry Varieties of West Bengal

- S1
- S1635
- BC259
- TR-10

- TR-23

These are adapted to the climatic conditions of West Bengal and are commonly cultivated for silkworm rearing.

Popular Mulberry Varieties of Hilly Areas

- Kanva-2
- Goshoerami
- Ichinose

These varieties are suitable for cooler climates.

Morphology of Mulberry

Morphology is the study of the external structure of plants.

Root

- Tap root system.
- Deep and well-developed.
- Absorbs water and minerals.
- Anchors the plant firmly in the soil.

Stem

- Woody and perennial.
- Cylindrical and branched.
- Green when young; brown when mature.
- Bears leaves, buds, flowers, and fruits.

Leaf

- Simple leaf with alternate arrangement.

- Broad, ovate or heart-shaped.
- Margin is serrated.
- Apex is pointed.
- Upper surface dark green; lower surface lighter.
- Rich in proteins, carbohydrates, vitamins, and minerals.
- Main food source of silkworm.

Flower (Floral Biology)

- Small and greenish.
- Unisexual.
- Monoecious or dioecious depending on the species.
- Pollination mainly by wind (anemophily).
- Flowering generally occurs during spring.

Fruit

- Multiple fruit called a sorosis.
- Changes colour from green to red, purple, or black when ripe.
- Sweet and edible in many species.

Seed

- Small and oval.
- Yellowish-brown.
- Used mainly for breeding and raising seedlings.

Economic Importance of Mulberry

1. Sole food plant of the silkworm (*Bombyx mori*).
2. Essential for silk production.
3. Fruits are edible and nutritious.
4. Leaves have medicinal value.
5. Wood is used for making agricultural tools and furniture.

6. Helps in soil conservation and environmental protection.

Important University Questions

Short Questions (2–5 marks)

1. Write the scientific classification of mulberry.
2. Name four important mulberry species.
3. Mention the characteristics of *Morus alba*.
4. Describe the morphology of a mulberry leaf.
5. Write the economic importance of mulberry.

Long Questions (10–15 marks)

1. Describe the taxonomy and morphology of mulberry with suitable diagrams.
2. Discuss the important species and varieties of mulberry cultivated in India.

Unit 1: Agroclimatic Zones for Mulberry Cultivation

Introduction

An agroclimatic zone is a geographical area having similar climate, soil, rainfall, and environmental conditions suitable for the cultivation of a particular crop. Mulberry grows best under warm and humid conditions with adequate sunlight and fertile soil.

Ideal Conditions for Mulberry Cultivation

Temperature: 24–28°C (Optimum)

Rainfall: 600–2500 mm per year

Relative Humidity: 65–85%

Sunshine: 6–8 hours daily

Altitude: Sea level to about 1500 m

Soil pH: 6.2–7.5

Best Soil: Fertile, deep, well-drained loamy soil

Agroclimatic Zones of Mulberry in India

1. Tropical Zone

Distribution

Karnataka

Tamil Nadu

Andhra Pradesh

Telangana

Parts of Maharashtra

Characteristics

High temperature throughout the year.

Moderate to high rainfall.

Irrigation is commonly practiced.

Highest leaf production.

Suitable Varieties

V1

S36

S54

MR2

Advantages

5–6 leaf harvests per year.

High-quality leaves.

Suitable for bivoltine and multivoltine silkworm rearing.

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2. Subtropical Zone

Distribution

West Bengal

Bihar

Uttar Pradesh

Assam

Odisha

Characteristics

Hot summers and cool winters.

Moderate rainfall.

Seasonal cultivation.

Suitable Varieties

S1

BC259

TR10

S1635

Advantages

Good leaf production.

Suitable for commercial sericulture.

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3. Temperate Zone

Distribution

Jammu & Kashmir

Himachal Pradesh

Uttarakhand

Characteristics

Cold winters.

Mild summers.

Snowfall in many areas.

Suitable Species

Morus serrata

Morus laevigata

Advantages

Good leaf quality.

Suitable for temperate silkworm races.

Factors Affecting Mulberry Growth

Climatic Factors

Temperature

Rainfall

Relative humidity

Sunlight

Wind

Soil Factors

Soil texture

Soil fertility

Soil pH

Organic matter

Drainage

Topographical Factors

Altitude

Slope

Water availability

Climatic Requirements

Temperature

Optimum: 24–28°C

Below 15°C: Growth becomes slow.

Above 38°C: Leaf quality decreases.

Rainfall

Ideal: 600–2500 mm/year

Well-distributed rainfall is beneficial.

Waterlogging should be avoided.

Relative Humidity

Ideal: 65–85%

Maintains leaf succulence.

Sunlight

Bright sunshine for 6–8 hours/day.

Essential for photosynthesis and healthy leaf production.

Soil Requirements

An ideal mulberry soil should be:

Deep

Fertile

Well-drained

Rich in organic matter

Free from waterlogging

pH 6.2–7.5

Importance of Agroclimatic Zones

1. Helps select suitable mulberry varieties.

2. Improves leaf yield and quality.

3. Reduces crop failure.

4. Increases cocoon production.

5. Ensures better silkworm health.

6. Improves farmers’ income.

Advantages of Suitable Agroclimatic Conditions

Healthy mulberry growth.

Better nutrient absorption.

Increased leaf production.

Improved disease resistance.

High-quality leaves for silkworm feeding.

Better cocoon yield and silk quality.

Key Points for Examination

Optimum temperature: 24–28°C

Rainfall: 600–2500 mm/year

Humidity: 65–85%

Soil pH: 6.2–7.5

Best soil: Fertile, well-drained loamy soil

Major agroclimatic zones: Tropical, Subtropical, Temperate

Important University Questions

Short Questions (2–5 Marks)

1. Define an agroclimatic zone.

2. What is the optimum temperature for mulberry cultivation?

3. Mention the ideal soil pH for mulberry.

4. Name the agroclimatic zones suitable for mulberry cultivation.

5. List any four climatic factors affecting mulberry growth.

Long Questions (10–15 Marks)

1. Describe the agroclimatic zones suitable for mulberry cultivation in India.

2. Discuss the climatic and soil requirements for successful mulberry cultivation.

3. Explain the importance of agroclimatic conditions in mulberry production.

UNIT 1: PROPAGATION TECHNIQUES OF MULBERRY

Introduction

Propagation is the process of producing new mulberry plants from seeds or vegetative plant parts. It is an important practice in sericulture because healthy and true-to-type plants ensure higher leaf yield and better quality leaves for silkworm rearing.

Mulberry can be propagated by:

1. Seed propagation
2. Cutting
3. Grafting
4. Layering

1. Seed Propagation

Definition

Seed propagation is the method of raising new mulberry plants from seeds. It is mainly used for breeding programmes and developing new varieties rather than commercial plantations.

Procedure

- Collect mature and healthy fruits.
- Extract seeds from ripe fruits.
- Wash and dry the seeds.
- Sow seeds in well-prepared nursery beds.
- Irrigate regularly.
- Seedlings become ready for transplanting after 3–4 months.

Advantages

- Produces healthy root system.
- Useful in breeding and hybridization.
- Easy and economical.

Disadvantages

- Plants are not true to type.
- Long juvenile period.
- Variation in growth and leaf quality.

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2. Propagation by Cutting

Definition

Propagation by cutting is the most common and economical method of mulberry multiplication. Stem cuttings are used to produce genetically identical plants.

Suitable Season

- Rainy season
- Spring season

Selection of Cutting

- Healthy disease-free plant.
- Mature stem.
- 18–22 cm long.
- Pencil-thick.
- 3–4 healthy buds.

Procedure

1. Prepare nursery beds.
2. Make cuttings with sharp secateurs.
3. Plant two-thirds of the cutting inside the soil.
4. Keep one or two buds above the soil.
5. Irrigate immediately.
6. Rooting occurs within 3–4 weeks.

Advantages

- Plants remain true to type.
- Quick establishment.
- High survival rate.
- Simple and inexpensive.

Disadvantages

- Root system is comparatively weaker than seed-grown plants.

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3. Grafting

Definition

Grafting is the union of two different plant parts so that they grow as one plant.

Parts of Graft

- **Stock:** Lower rooted plant.
- **Scion:** Upper shoot of desired variety.

Types

- Cleft grafting
- Tongue grafting
- Veneer grafting

Procedure

- Select healthy stock and scion.
- Make matching cuts.
- Join carefully.
- Tie with grafting tape.
- Cover with grafting wax or polythene.
- After successful union, new shoots emerge.

Advantages

- Combines desirable characters.
- Disease-resistant rootstock.
- Better plant performance.

Disadvantages

- Requires skilled labour.
- More expensive than cutting.

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4. Layering

Definition

Layering is a method in which roots are induced on a stem while it is still attached to the parent plant.

Types

- Simple layering
- Air layering (Gootee)

Procedure

- Select a healthy branch.
- Bend it to the ground or remove a ring of bark (air layering).
- Cover with moist soil or moss.
- Keep moist.
- Roots develop after a few weeks.
- Separate and transplant.

Advantages

- High success rate.
- Plants remain true to type.
- Strong plants obtained.

Disadvantages

- Time-consuming.
- Less suitable for large-scale multiplication.

Nursery Management

Definition

A nursery is a place where young mulberry plants are raised before transplantation.

Objectives

- Produce healthy seedlings.
- Ensure uniform plant growth.
- Reduce mortality after transplanting.

Nursery Bed Preparation

- Select fertile, well-drained land.
- Remove weeds and stones.
- Add farmyard manure (FYM).
- Prepare raised beds.
- Provide irrigation and drainage.

Nursery Care

- Regular watering.
- Weed removal.
- Protection from pests and diseases.
- Shade during hot weather.
- Timely fertilizer application.

Growth Regulators

Definition

Growth regulators are organic substances that influence plant growth and development even in small quantities.

Important Growth Regulators

Auxins

Examples:

- IAA (Indole-3-acetic acid)
- IBA (Indole-3-butyric acid)
- NAA (Naphthalene Acetic Acid)

Functions

- Promote root formation.
- Increase rooting in cuttings.
- Cell elongation.

Gibberellins (GA_3)

Functions

- Promote stem elongation.
- Increase plant height.
- Break seed dormancy.
- Improve leaf production.

Cytokinins

Functions

- Stimulate cell division.
- Promote shoot growth.
- Delay leaf ageing.

Ethylene

Functions

- Fruit ripening.
- Leaf fall.
- Flowering regulation.

Abscisic Acid (ABA)

Functions

- Causes dormancy.
- Closes stomata during water stress.
- Helps plants tolerate drought.

Importance of Propagation Techniques

- Rapid multiplication of plants.

- Maintenance of superior varieties.
- Uniform leaf quality.
- Increased leaf production.
- Better silkworm feeding.
- Higher cocoon yield.

Differences Between Seed Propagation and Cutting

Seed Propagation	Cutting
Uses seeds	Uses stem cuttings
Variation occurs	True to type plants
Slow	Fast
Strong tap root	Adventitious roots
Used for breeding	Used for commercial cultivation

Important University Questions

Short Questions (2–5 Marks)

1. Define propagation.
2. What is vegetative propagation?
3. What is grafting?
4. Name four plant growth regulators.
5. Mention two advantages of cutting.

Long Questions (10–15 Marks)

1. Describe different methods of mulberry propagation.
2. Explain propagation by cutting with advantages and disadvantages.
3. Write a detailed note on nursery management.
4. Discuss the role of plant growth regulators in mulberry cultivation.

UNIT 1: ESTABLISHMENT OF MULBERRY GARDEN

Introduction

A mulberry garden is established to obtain a continuous supply of healthy and nutritious leaves for silkworm rearing. Proper establishment ensures higher leaf yield, better quality leaves, and a longer productive life of the plantation.

Definition

The establishment of a mulberry garden is the process of selecting a suitable site, preparing the land, planting healthy saplings or cuttings, and managing the field properly for successful mulberry cultivation.

Objectives

- To produce high-quality mulberry leaves.
- To obtain maximum leaf yield.
- To ensure healthy growth of mulberry plants.
- To increase cocoon and silk production.

Selection of Site

The site should have the following characteristics:

- Fertile and deep loamy soil.
- Well-drained land.
- Soil pH between **6.2 and 7.5**.
- Good irrigation facilities.
- Adequate sunlight.
- Easy transportation and accessibility.
- Free from waterlogging.

Land Preparation

Proper land preparation helps in better root growth and higher leaf production.

Steps

1. Remove weeds, bushes, and stones.
2. Plough the land 2–3 times.
3. Break soil clods and level the field.
4. Mix well-decomposed Farm Yard Manure (FYM) into the soil.
5. Prepare pits or furrows according to the planting method.

Soil Improvement

Before planting:

- Apply **10–20 tonnes of FYM per hectare**.
- Correct acidic soil with lime.
- Improve alkaline soil with gypsum if required.
- Ensure proper drainage.

Planting Materials

Healthy planting materials should be:

- Disease-free.
- Pest-free.
- 8–10 months old.
- Well-rooted.
- True to the variety.

Time of Planting

The best planting seasons are:

- **Rainy season (June–July)**
- **Spring season (February–March)**

Planting should be avoided during severe summer and frost.

Planting Methods

1. Pit Method

- Dig pits of about **30 × 30 × 30 cm**.
- Fill pits with soil mixed with FYM.
- Plant one cutting or sapling per pit.
- Irrigate immediately.

Advantages

- Better root development.
- Higher survival rate.

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2. Furrow Method

- Prepare long furrows.
- Place cuttings in furrows.
- Cover with soil.
- Irrigate after planting.

Advantages

- Easy irrigation.
- Suitable for large fields.

Spacing

Spacing depends on cultivation method.

Rainfed Plantation

90 cm × 90 cm

Irrigated Plantation

60 cm × 60 cm

Proper spacing provides:

- Better sunlight.
- Good air circulation.
- Easy intercultural operations.
- Reduced disease incidence.

Irrigation

Water is essential for healthy leaf production.

Irrigation Schedule

- Irrigate immediately after planting.
- Water regularly during dry periods.
- Avoid waterlogging.
- Frequency depends on climate and soil type.

Importance

- Promotes root growth.
- Maintains leaf quality.
- Prevents wilting.

Drainage

Excess water should be removed quickly.

Importance

- Prevents root rot.
- Improves aeration.
- Enhances nutrient uptake.
- Maintains healthy plant growth.

Intercultural Operations

Weeding

- Remove weeds regularly.
- Prevent competition for nutrients.

Hoeing

- Loosen the soil.
- Improve aeration.
- Increase water infiltration.

Earthing Up

- Heap soil around the base of plants.
- Support the stem.
- Promote root development.

Mulching

- Cover soil with dry leaves or straw.
- Reduce evaporation.

- Suppress weeds.
- Maintain soil moisture.

Fertilizer Application

Mulberry requires balanced nutrition.

Organic Fertilizers

- Farm Yard Manure (FYM)
- Compost
- Vermicompost

Chemical Fertilizers

- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)

Balanced fertilizer application increases leaf yield and quality.

Pruning

Definition

Pruning is the removal of unwanted branches to encourage the growth of new shoots.

Advantages

- Produces tender leaves.
- Increases leaf yield.
- Maintains plant shape.
- Improves aeration.

Care After Planting

- Regular irrigation.
- Timely fertilizer application.
- Weed control.
- Pest and disease management.
- Proper pruning.
- Gap filling wherever plants die.

Importance of Proper Garden Establishment

1. Healthy plant growth.
2. Better leaf production.
3. High-quality leaves.
4. Increased cocoon yield.
5. Longer plantation life.
6. Better economic returns.

Key Points for Examination

- Best soil: **Deep, fertile, well-drained loamy soil**
- Soil pH: **6.2–7.5**
- Best planting seasons: **February–March and June–July**
- Common planting methods: **Pit method and Furrow method**
- Major intercultural operations: **Weeding, hoeing, earthing up, and mulching**

Important University Questions

Short Questions (2–5 Marks)

1. Define a mulberry garden.
2. Mention the ideal soil pH for mulberry cultivation.
3. Name two planting methods used in mulberry.

4. What is earthing up?
5. State two advantages of pruning.

Long Questions (10–15 Marks)

1. Describe the establishment of a mulberry garden.
2. Explain the importance of site selection, land preparation, and planting methods in mulberry cultivation.
3. Discuss the intercultural operations carried out in a mulberry garden.

UNIT 1: CULTIVATION PRACTICES OF MULBERRY

Introduction

Cultivation practices are the agricultural operations carried out from planting to harvesting to obtain healthy plants and a high yield of quality mulberry leaves. Proper cultivation practices are essential for successful sericulture.

Objectives of Mulberry Cultivation

To obtain maximum leaf yield.

To produce nutritious leaves for silkworms.

To maintain soil fertility.

To improve cocoon production and silk quality.

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1. Training of Mulberry Plants

Definition

Training is the practice of giving a desired shape to the mulberry plant during its early growth.

Objectives

Develop a strong framework.

Facilitate easy harvesting.

Improve light penetration.

Encourage healthy branch development.

Types of Training

a) Bush System

Plants are maintained at a low height (about 30–50 cm).

Commonly practiced under irrigated conditions.

Suitable for frequent leaf harvesting.

b) Tree System

Plants are allowed to grow into small trees.

Suitable for rainfed and hilly regions.

Mainly used for leaf picking.

Advantages of Training

Easy intercultural operations.

Better aeration.

Uniform leaf production.

Easy pest and disease management.

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2. Pruning

Definition

Pruning is the removal of old, dry, diseased, and unwanted branches to promote the growth of new shoots.

Objectives

Encourage new shoot formation.

Increase leaf yield.

Improve leaf quality.

Maintain plant health.

Types of Pruning

Bottom pruning

Middle pruning

Top pruning

Advantages

Produces tender leaves.

Improves air circulation.

Reduces pest and disease incidence.

Enhances photosynthesis.

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3. Irrigation

Definition

Irrigation is the artificial application of water to the crop according to its requirement.

Importance

Maintains soil moisture.

Promotes healthy growth.

Improves leaf quality.

Prevents drought stress.

Methods of Irrigation

a) Flood Irrigation

Water is supplied to the entire field.

Simple and inexpensive.

b) Furrow Irrigation

Water flows through furrows between rows.

Saves water.

c) Drip Irrigation

Water is supplied directly to the root zone.

Most efficient method.

Conserves water and fertilizers.

Advantages of Drip Irrigation

Saves 30–50% water.

Reduces weed growth.

Improves fertilizer efficiency.

Produces higher leaf yield.

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4. Nutrient Management

Mulberry is a nutrient-exhaustive crop and requires balanced fertilization.

Organic Manures

Farm Yard Manure (FYM)

Compost

Vermicompost

Green manure

Advantages

Improves soil structure.

Increases microbial activity.

Enhances water-holding capacity.

Chemical Fertilizers

Nitrogen (N)

Promotes vegetative growth.

Increases leaf size.

Phosphorus (P)

Encourages root development.

Improves plant vigour.

Potassium (K)

Increases disease resistance.

Improves leaf quality.

Balanced application of NPK fertilizers is essential for obtaining high-quality mulberry leaves.

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5. Weed Management

Definition

Weeds are unwanted plants that grow along with the crop and compete for nutrients, water, sunlight, and space.

Harmful Effects

Reduce leaf yield.

Compete for nutrients.

Harbour pests and diseases.

Increase cultivation cost.

Weed Control Methods

Mechanical Method

Hand weeding.

Hoeing.

Cultural Method

Mulching.

Proper spacing.

Crop sanitation.

Chemical Method

Use of recommended herbicides under expert guidance.

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6. Harvesting of Mulberry Leaves

Definition

Harvesting is the collection of mature mulberry leaves for feeding silkworms.

Methods

Leaf Picking

Individual mature leaves are plucked.

Suitable for young silkworms.

Shoot Harvesting

Entire shoots are cut.

Suitable for late-age silkworms.

Precautions

Harvest healthy leaves only.

Avoid diseased or insect-damaged leaves.

Harvest during cool hours of the day.

Do not expose harvested leaves to direct sunlight.

Importance of Proper Cultivation Practices

Higher leaf production.

Better leaf quality.

Healthy mulberry plants.

Improved silkworm growth.

Increased cocoon production.

Better silk quality.

Higher farmer’s income.

Key Points for Examination

Training gives the desired shape to the plant.

Pruning promotes new shoot growth.

Drip irrigation is the most efficient irrigation method.

Nitrogen promotes vegetative growth.

Phosphorus promotes root development.

Potassium improves disease resistance.

Weeds compete for water, nutrients, and sunlight.

Harvest only healthy leaves for silkworm feeding.

Differences Between Training and Pruning

Training	Pruning
Gives desired shape to the plant	Removes unwanted branches
Done during early growth	Done periodically
Develops plant framework	Stimulates new shoot growth
Improves plant structure	Improves leaf yield and quality

Important University Questions

Short Questions (2–5 Marks)

1. Define training in mulberry.

2. What is pruning?

3. Name three methods of irrigation.

4. State the functions of nitrogen in mulberry.

5. Mention two methods of weed control.

6. Differentiate between leaf picking and shoot harvesting.

Long Questions (10–15 Marks)

1. Describe the cultivation practices of mulberry.

2. Explain the importance of irrigation, nutrient management, and weed management in mulberry cultivation.

3. Discuss the different methods of harvesting mulberry leaves and their importance.

UNIT 1: MULBERRY MANAGEMENT

Introduction

Mulberry management refers to all the practices carried out after establishing a mulberry garden to maintain healthy plants and ensure continuous production of high-quality leaves for silkworm feeding. Proper management increases leaf yield, improves leaf quality, and enhances cocoon production.

Objectives of Mulberry Management

- To maintain healthy mulberry plants.
- To produce high-quality leaves throughout the year.
- To improve soil fertility.
- To reduce losses caused by pests, diseases, and weeds.
- To increase cocoon yield and silk production.

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1. Irrigation Management

Definition

Irrigation management is the proper scheduling and application of water according to the crop's requirement.

Importance

- Maintains optimum soil moisture.
- Promotes healthy plant growth.
- Improves leaf quality and yield.
- Prevents water stress.

Methods of Irrigation

- Flood irrigation
- Furrow irrigation
- Drip irrigation (most efficient)
- Sprinkler irrigation

Precautions

- Avoid waterlogging.
- Irrigate during morning or evening.
- Maintain proper drainage.

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2. Nutrient Management

Mulberry is a heavy feeder and requires balanced nutrition.

Organic Manures

- Farm Yard Manure (FYM)
- Compost
- Vermicompost
- Green manure

Benefits

- Improves soil fertility.
- Enhances soil microbial activity.
- Increases water-holding capacity.

Inorganic Fertilizers

Nitrogen (N)

- Promotes vegetative growth.
- Produces large, green leaves.

Phosphorus (P)

- Encourages root growth.
- Improves plant vigour.

Potassium (K)

- Improves disease resistance.
- Increases leaf quality.

Balanced application of fertilizers is essential for maximum leaf production.

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3. Weed Management

Definition

Weed management is the removal and control of unwanted plants growing in the mulberry field.

Importance

- Reduces competition for nutrients and water.
- Improves plant growth.
- Minimizes pest and disease problems.

Methods

Mechanical Control

- Hand weeding
- Hoeing

Cultural Control

- Mulching
- Proper spacing
- Crop sanitation

Chemical Control

- Recommended herbicides under expert supervision.

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4. Pest Management

Healthy mulberry plants should be protected from insect pests.

Common Mulberry Pests

- Thrips
- Whitefly
- Mealybug
- Bihar Hairy Caterpillar
- Tukra

Management

- Regular field inspection.
- Remove affected plant parts.
- Maintain field sanitation.
- Encourage natural enemies.
- Use recommended insecticides only when necessary.

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5. Disease Management

Common Diseases

- Powdery mildew
- Leaf spot
- Root rot
- Bacterial leaf blight

Control Measures

- Use disease-free planting material.
- Maintain proper spacing.
- Avoid excess irrigation.
- Remove infected leaves.
- Apply recommended fungicides or bactericides.

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6. Pruning Management

Pruning should be carried out regularly to:

- Produce new shoots.
- Increase leaf yield.
- Improve leaf quality.
- Remove diseased branches.

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7. Harvesting Management

Leaves should be harvested:

- At proper maturity.
- During cool hours.
- Without damaging the plant.
- According to silkworm age.

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8. Soil Management

Good soil management includes:

- Addition of organic manure.
- Proper drainage.
- Soil testing.
- pH correction when necessary.
- Prevention of soil erosion.

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9. Water Conservation Practices

- Mulching
- Drip irrigation
- Rainwater harvesting
- Proper drainage channels

These practices improve water-use efficiency.

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10. Integrated Nutrient Management (INM)

Integrated Nutrient Management is the combined use of:

- Organic manure
- Chemical fertilizers
- Biofertilizers

Advantages

- Maintains soil fertility.
- Reduces fertilizer cost.
- Increases leaf production.
- Environment-friendly.

Integrated Pest Management (IPM)

Integrated Pest Management is an eco-friendly approach that combines different methods to control pests economically with minimum environmental impact.

Components

- Cultural methods
- Mechanical methods
- Biological methods
- Chemical methods (only when necessary)

Advantages

- Reduces pesticide use.
- Protects beneficial insects.
- Prevents pest resistance.
- Safe for the environment.

Importance of Mulberry Management

1. Ensures healthy plant growth.
2. Produces high-quality leaves.
3. Increases leaf yield.
4. Improves silkworm health.
5. Enhances cocoon production.
6. Reduces pest and disease incidence.
7. Increases farmers' income.

Key Points for Examination

- Drip irrigation is the most efficient irrigation method.
- Nitrogen promotes leaf growth.
- Potassium increases disease resistance.
- Weed control improves leaf yield.
- IPM is an eco-friendly pest management strategy.

- INM combines organic, inorganic, and biofertilizers.

Important University Questions

Short Questions (2–5 Marks)

1. Define mulberry management.
2. What is Integrated Pest Management (IPM)?
3. What is Integrated Nutrient Management (INM)?
4. Name four important mulberry pests.
5. Mention two methods of weed control.
6. State two advantages of drip irrigation.

Long Questions (10–15 Marks)

1. Describe the various practices involved in mulberry management.
2. Discuss the importance of irrigation, nutrient management, weed management, and pest management in mulberry cultivation.
3. Explain Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) in mulberry cultivation.

Note

These notes have been prepared and compiled by Ankit Mondal for the academic benefit of B.Sc. Sericulture student . Every effort has been made to ensure that the information is accurate, complete, and easy to understand. However, unintentional errors or omissions may still be present.

If you find any mistakes or have suggestions for improvement, your feedback is always welcome.

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